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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/754,175

01/09/2004

Niranjan Damera-Venkata

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05/24/2007

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EXAMINER

TYLER, NATHAN K

ART UNIT

PAPER NUMBER

2609

MAIL DATE

DELIVERY MODE

05/24/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/754,175	Applicant(s) DAMERA-VENKATA, NIRANJAN	
	Examiner Nathan K. Tyler	Art Unit 2609	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-19 is/are allowed.
- 6) ☒ Claim(s) 1, 2, and 9 is/are rejected.
- 7) ☒ Claim(s) 3-8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09012004; 01082005</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections - 37 CFR 1.75(a)*

1. The following is a quotation of 37 CFR 1.75(a):

The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

2. Claim 11 is objected to under 37 CFR 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Regarding **claim 11**, this claim depends from claim 2 and as such, the term “step (d)(ii)” at line 1 lacks an antecedent basis. However, it appears from the context of the claim when read in light of the specification that claim 11 should instead depend from claim 10, as claim 10 provides an antecedent basis for “step (d)(ii)”; and this will be assumed for examination purposes.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Art Unit: 2609

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (US 5742703 A).

Regarding **claim 1**, Lin discloses a method of generating an N gray level dither matrix for an output device having sub-pixel addressability, the method comprising the steps of creating a super-resolution grid [i, j] corresponding to a pixel grid [p,q] (see Fig. 6; “at step 260, the PDL target document is first decomposed to a super high-addressability bitmap. Assuming a 600.times.600 spot/inch (spi) output resolution, the high-addressability bitmap would be at 2400.times.2400 spi”); generating the dither matrix for a sub-pixel grid [m,n], wherein said dither matrix is comprised of a plurality of dither patterns (Figs. 4A-4D demonstrate examples of the plurality of dither patterns), each corresponding to one of the N gray levels, wherein each said dither pattern is derived using the super resolution grid [ij] (see Fig. 6; dither matrix is generated for sub-pixel grid “2400x600 training image” and is derived using the super resolution grid “2400 x 2400 spi” generated by numeral 260 in Fig. 6).

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lin and Cooper (US 6710778 B2).

Regarding **claim 2**, Lin does not disclose generating the dither matrix using a donut filtering method.

Cooper discloses a method for halftoning using a donut filtering method (“a method for halftoning is provided for use with a computer system, in which the method comprises... halftoning input data using the weighting function to create at least one dot cluster, wherein, at each dot cluster, the weighting function reaches at least one first minima at substantially a center position, then increases to at least one maximum along a path directed away from the center position, and finally decreases toward at least one second minima further along the path” at column 3, line 64. See Fig. 1).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to use the “donut” filtering method disclosed by Cooper in the dither matrix generating method disclosed by Lin, so that Lin’s method could create stochastic screens that are reproducible by conventional printers (“stochastic dithering requires reliable reproduction of dispersed dots. However, printers often have difficulty rendering individual, dispersed dots

consistently (especially laser or other electrophotographic printers)... It could be a significant advantage for certain physical printers to use a hybrid version of halftoning that uses clustered-dot, unordered dithering” at Cooper column 1, line 50).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Lin and Shiomi et al. (US 5541743 A).

Regarding **claim 9**, while Lin discloses generating a halftone for a continuous-tone area of an image (“Those regions may then be represented as enhanced high-addressability binary images while the continuous tone regions are represented as high-addressability halftone output” at column 3, line 58), Lin does not disclose generating the dither matrix using frequency modulation techniques.

Shiomi discloses a halftoning system that uses frequency modulation to generate the dither patterns (“FIG. 4 illustrates a variation in dot arrangement of the FM dots in the same unit area “ at column 5, line 32).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to use the frequency modulation technique taught by Shiomi to generate the dither matrix for the halftoning system taught by Lin, so that contone areas of a document could be reproduced with higher spatial resolution (“The FM screening uses dots which are significantly smaller than conventional halftone dots, thus reproducing an original image with high resolution” at Shiomi column 1, line 56).

*Allowable Subject Matter*

8. Claims 3, 4, 5, 6, 7, and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 10, 11, 12, 13, 14, 15, 16, 17, 18, and 19 are allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 3, and claims 4 through 8** that depend from claim 3, the prior art teaches generating a dither matrix that is derived using a super resolution grid, as shown in the rejection for claim 1. However, in the prior art teaching, after the super resolution grid is created, there are intermediate steps prior to the creation of the dither matrix, and the resulting output is created on the sub-pixel grid. The prior art does not teach generating the dither output on the super resolution grid, and then converting the super resolution grid to an effective response on the sub-pixel grid.

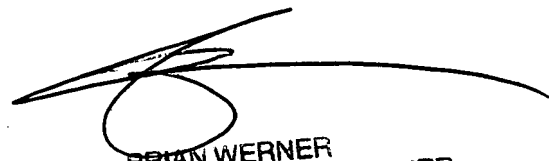
Regarding **claims 10 and 15, and claims 11 through 14 and 16 through 19** that depend from claims 10 and 15, respectively, the prior art is deficient for the reasons stated above.

*Conclusion*

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Tyler whose telephone number is 571-270-1584. The examiner can normally be reached on M-F 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Werner can be reached on 571-272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



BRIAN WERNER  
SUPERVISORY PATENT EXAMINER

Nathan K Tyler  
Examiner  
Art Unit 2609